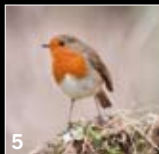


The **CON** is **ON**

Cavan Scott investigates
the crimes of the star of
this year's *Springwatch*

“Within hours of hatching the blind and naked cuckoo chick pushes any remaining eggs from the nest”



A host of hosts

In Britain, five main hosts account for 90 percent of the parasitised nests. In heathland the cuckoo will choose the **dunnock** (1), in marshland it picks the **reed warbler** (2), while in open country it's the **pied wagtail** (3). The **meadow pipit** (4) falls foul of the cuckoo's machinations in moorland, while the nation's favourite bird, the **robin** (5), is the cuckoo's choice for farm and woodland. Of all the cuckoo's victims, the dunnock puts up the least resistance, leaving experts to theorise that it's a more recent target for the cuckoo's crime, and hasn't had do much time to evolve its defences.

such extraordinary lengths, and worldwide only around 1 percent of all birds share its methods.

After 23 years studying the cuckoo's sinister plans in Wicken Fen, Britain's foremost expert on cuckoo behaviour, Dr Nicholas Davies of the University of Cambridge, is able to shed some light on the matter.

“Foisting your parental duties on somebody else may seem to be a wonderful thing to do,” he explains. “But over evolutionary time, the hosts fight back so that the poor cuckoo has to work incredibly hard to be lazy, simply because it has to overcome all of these defences. What we witness is a fantastic arms race between parasite and host.”

This titanic battle commences with that famous bird call. In May, the blue-grey male cuckoo arrives on our shores from Africa and booms out his distinctive ‘cuc-coo’, thereby establishing himself as God's gift to the slightly browner female. Nature takes its course and the female's work begins.

Watching and waiting

If you think you're a good birdwatcher, you've nothing on the female cuckoo. Perching motionless in a tree she will lay in wait, monitoring the nests of her potential victims. When the host is away feeding, the cuckoo strikes, silently swooping into the empty nest and gobbling down one of the host's eggs so that her own, which she speedily lays, is offered better incubation. Her job done she zooms off, never to see her offspring again. The entire operation takes just 10 seconds.

But why does she have to be so quick? Davies's experiments hold the answer. With his team, he planted stuffed cuckoos near reed warblers' nests. When the warblers spotted this threat they attacked the fake bird, and after it was removed they were more likely to check their clutch, rejecting eggs that they didn't believe were theirs. It's the same as when you suddenly decide to install a burglar alarm after you've heard about

place? Why doesn't the cuckoo just rear its own young, instead of abdicating responsibility to its poor victims?

As we strain to hear the first call of the harbinger of spring, it's time to turn nature detective and discover the true story behind the cuckoo's fascinating crime.

Speculative theories

It's a crime that has captivated nature lovers for centuries. In the 18th century, Edward Jenner first recorded a newly hatched cuckoo's murderous rampage. Puzzled by the migratory cuckoo's parasitical existence, he suggested that the adult birds simply didn't have time to raise their young, needing to nip back to Africa as

soon as possible. Around the same time, the famed naturalist Gilbert White guessed that the cuckoo's substantial stomach meant that it couldn't incubate its eggs. To White, the desertion of the eggs was a “monstrous outrage on maternal affection”.

But it was Charles Darwin who cut to the chase in 1859's *On the Origin of Species*. He identified the immense benefit of being a brood parasite. Freed from parental duties, the cuckoo was able to lay many more eggs than its victims. However, Darwin's observation prompts one question: if the cuckoo's con is so effective, why aren't more birds at it? Of all of British birds, only the common cuckoo (*Cuculus canorus*) goes to

They are nature's hustlers, cheats that have perfected the ultimate long con.

But even though they are born with an instinctive need to murder, our spirits are raised when we hear their cry. In fact, their song is one of the few bird calls that just about anyone can identify, whether you're a birder or not.

The story of the cuckoo's treachery is well known, but have you ever stopped to think how they do it? Why does the tiny reed warbler or meadow pipit spend its spring tearing around to feed the gargantuan interloper that is spilling out of its nest? And why bother with the deceit in the first

Photos: Cuckoo Martin Hamblin, (pied wagtail) Andy Hay, (meadow pipit) Terry Buton, (reed warbler) David Tipling, (newly hatched chick) Mike Richards (all rspb-images.com), (dunnock) Stephen Dator/NRPA

▲ robberies in the area. If the hosts are alerted to the presence of a cuckoo they are more suspicious of the eggs in their nest. But if they are unaware, they will incubate the interloper in blissful ignorance. Recent research has also shown that if the cuckoo is discovered and mobbed by its victims, the resulting hullabaloo is more likely to bring the nest to the attention of predators, thereby putting the cuckoo's precious egg in jeopardy. To ensure that they can trick the hosts, the cuckoo has evolved to produce eggs that perfectly mimic the host's own. They specialise in one species and pass the ability down to their young.

Evolution in action

Over a period of two years, Davies added painted wooden eggs of various sizes and colours to reed warblers' nests. If they were even slightly different to the bird's own clutch they were pushed out of the nest. The experiment also highlighted another aspect of this battle. "Hosts that are targeted by cuckoos evolve less variation in their own eggs," he explains. "This makes very good sense. It's easier to spot a strange egg if all of your eggs look the same. So the cuckoo had to develop an even better match."

While this mimicry is fantastic, the real jaw-dropping moment comes when the chick is born. The cuckoo's egg has a head start, requiring half-a-day's less incubation than the host's clutch, possibly due to the fact that newly laid cuckoo eggs contain partly developed embryos. The chick's homicidal tendencies are just as developed, and within hours of hatching the blind and naked infant pushes any remaining eggs from the nest. If any other chicks have had the misfortune to have already hatched, they're also barged out to fall to their death.

Alone in the nest, the cuckoo now has the sole attention of its foster parents, who will dart around to feed it, leaving them no time to breed again for the entire season.



The cuckoo chick is a master impressionist, leading the reed warbler to believe it's feeding its own hungry chicks

But even if the host had been hoodwinked into incubating a perfectly matched egg, surely they notice that their baby is twice their size? Early in his research, Nicholas wondered if the chick's immense proportions were the reason that the hosts were confused into feeding the chick, which eats about the same amount as four ravenous reed warblers. Yet when he replaced a cuckoo chick with a similarly sized blackbird, the reed warblers cut back on feeding. Then he twigged that while the mother cuckoo uses visual trickery, the baby uses aural.

"The cuckoo chick has this amazing begging call," he says. "It sounds like a whole brood of hungry chicks. So we repeated the blackbird experiment, giving it a helping hand in the form of a little loudspeaker next to nest. Every time the blackbird begged, we played the cuckoo begging call through the speaker." The effect was instantaneous; the reed

warblers doubled their efforts to feed the chick.

As the chick gets older the intensity of its begging cry increases to make the hosts work harder, victims of what Darwin called "mistaken instinct". The host is hard-wired to feed its hungry young, and so the con works. After 19 days the cuckoo is literally bursting from its nest and will still be supported by its poor foster parents for a further two weeks, before abandoning them to head to Africa.

So, we know how the cuckoo pulls off its dastardly plan, but still haven't answered the question of why. Is it a cruel or evil bird? Of course not. This is just nature at work, and perhaps one of the best examples of Darwin's survival of the fittest. The arms race will continue, with both sides evolving to protect themselves or deceive the other, but our fascination with the cuckoo will remain. After all, everyone loves a rogue. ☺

The alarming decline of the cuckoo

Clever though the cuckoo may be, the bird is in long-term decline in the UK. The last 30 years have seen the cuckoo population slump by 47 percent and the bird is expected to join the ICUN Red List of threatened species this year. The decline is a mystery. The cuckoo can live in every habitat, so it shouldn't be susceptible to local problems, but there are a few main theories as to why numbers are falling:

- The cuckoo feeds on hairy moth caterpillars, which themselves are in decline.
- If the hosts, such as meadow pipits, are in decline then it seems logical that the cuckoos would also suffer. Certainly, it's easier to spot cuckoos in marshlands, where reed warblers are doing very well.
- There has been a mysterious decrease in migratory birds. Some believe that the exhausting journey across the Sahara is claiming lives as the desert area increases in size. Other theories include habitat degradation and climate change.
- As a migrant bird, the cuckoo flees harsh winters in Africa. However, milder winters here favour our resident birds, which can establish breeding sites in the best territories before the visitors arrive.

BBC TWO For more on the cuckoo's plight, watch *Springwatch* on BBC Two from 23 May at 8pm.

BBC Wildlife

Chris Packham, the new host of *Springwatch*, writes exclusively for *BBC Wildlife Magazine*, on sale 19 May. The issue also contains features on barn owls and bumblebees.

